

DPD-7979-59

24 November 1959

MEMORANDUM FOR : TSS/APD

SUBJECT : Patent Disclosure

1. Attached is a disclosure of an invention submitted by Westinghouse Electric Company under our Contract No. TA-3034 for development of an avoidance system.

2. The contractor has advised that it does not intend to file a patent application on this disclosure.

3. Please review this disclosure and advise whether or not you recommend that the Agency file a patent application on the "Wide Range AFC."

Contracting Officer

*I see no reason for CDA
to file a patent application
for this invention.*

155/1110
Project Engineer

*File:
TA-3034
1-1 P Sect*

PATENT DISCLOSURE TRANSMITTAL SHEET

38319

TO: [REDACTED]

PLANT I

WORKS, PATENT DEPARTMENT

STAT

(INSERT E. PITTSBURGH, SO. PHILA., OR BLOOMFIELD)

DISCLOSURE TITLE		
WIDE RANGE AFC		
DISCLOSURE BOOK NO.	PAGE NO.	TRANSMITTAL DATE
5311	9	5/16/58
WORKS	DIVISION	DEPARTMENT
FROM: BALTIMORE	AIR ARM DIVISION	SURVEILLANCE RADAR

INVENTOR PLEASE NOTE: You should send this sheet and your disclosure direct to the Patent Department. Please give all information requested.

1. Was this invention made, or first used, in the performance of a Government contract? _____ If so, give following information on first such contract: GOVERNMENT CONTRACT NO. TA 3034 WESTINGHOUSE GEN. ORD. NO. AAD 30465

2. Was this invention made on a
Standard Development Order ☐ LRMD Order ☐ Customer Order ☒ Or otherwise ☐

3. Has invention been tried experimentally? No

4. Will it be used on Standard Apparatus ☐ Particular Job ☐ Shop or Lab ☐ Or no decision ☒

5. When will it first be built and shipped? _____

6. Give names and dates of existing or proposed printed publications disclosing invention: _____

7. Give related Disclosure Numbers _____

8. Where necessary, please amplify above answers in space below, and give engineering or commercial bearing on our position in its field or on related apparatus.

THIS IDEA COULD FIND APPLICATION IN ANY RADAR, MISSILE ETC.

PATENT DEPARTMENT
RECEIVED
OCT 27 1958

[REDACTED]

SIGNATURE OF INVENTOR(S) [REDACTED]

STAT
STAT
5-16-58

PATENT DEPARTMENT
RECEIVED
OCT 15 1958
FILE CLERK

DISCLOSURE TO PATENT DEPARTMENT

(WORK/COPY SHEET)

Book No. 5311

PAGE 9

IMPORTANT: SIGN, DATE AND HAVE WITNESSED.
ATTACH ALL ORIGINAL SKETCHES OR DESCRIPTIONS
SIGNED, DATED AND WITNESSED, OR IDENTIFY THE
PERMANENT LOCATION THEREOF.

PATENT DEPARTMENT
 RECEIVED
 OCT 27 1958

May 16, 1958

DATE WHEN WRITTEN OR TYPED ON THIS SHEET

COMPLETE AND ATTACH TRANSMITTAL SHEET

DATE WHEN WRITTEN OR TYPED ON SOME OTHER SHEET, IF EARLIER

STAT

TITLE: WIDE RANGE AFC

This disclosure proposes simple light weight wide range AFC. Two loops are provided to maintain the local oscillator at its proper frequency relative to the transmitter. One loop electronic in nature consisting of a standard I.F. phanatron circuit corrects for small frequency errors. This is fully explained in the literature and merits no further explanation.

The other loop consisting of electro mechanical elements corrects for gross frequency variations. This loop contains the unique features claimed by this disclosure.

Previous systems have utilized the error voltages generated in the I.F. amplifier-discriminator circuits to correct both the electronic as well as the mechanical tuning of the L.O. This has several disadvantages - mainly complexity and chance of improper lock-up due to compensating errors in both loops. In this system the mechanical tuning is determined by the power output of the klystron. It should be emphasized that it is not necessary to closely maintain mechanical tuning since small changes can be compensated for by the electronic loop.

The proposed electromechanical loop is as shown in Fig. 1. The output from a microwave detector e.g., crystal, sampling the L.O. power, is fed into one channel of a differential amplifier. The other input is obtained from a reference either fixed or determined directly from the maximum detected power level. The latter could be accomplished by various circuits such as a capacitor charged through a rectifier. The output from the amplifier is used to control both a relay and a reversing switch as shown.

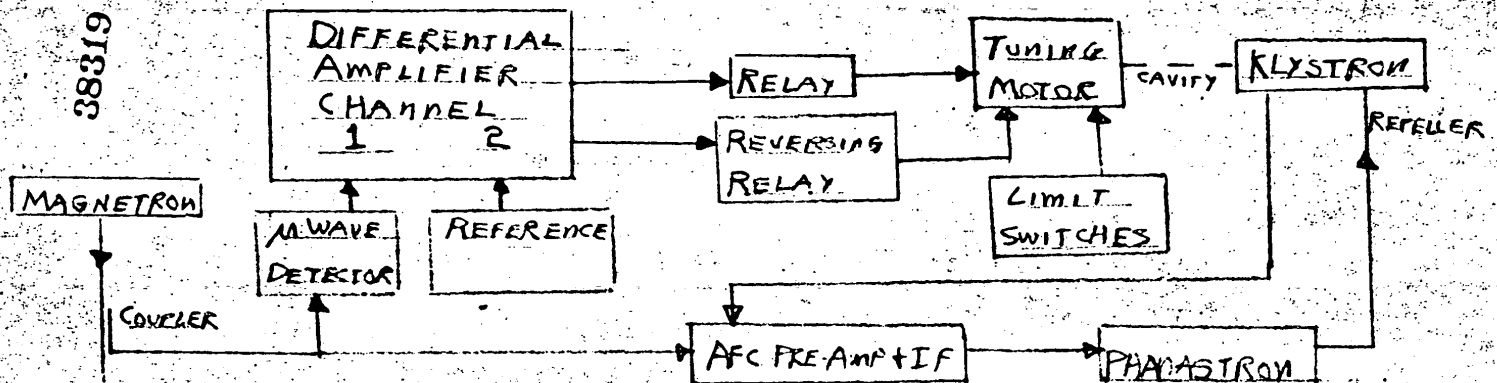
When the signal level in channel 1 drops somewhat below that of 2 the relay closes energizing the tuning motor. In the event the level in 1 drops considerably below that of 2 not only does the relay close but also the reversing switch is tripped. Limit switches are provided at each end of the mechanical range to automatically reverse the tuning motor. By proper adjustment of the above parameters the klystron can be maintained at or near its maximum power output.

This system differs from previous ones in that the mechanical loop is simpler. As explained above it is not necessary for it to be highly accurate. This results in a consequent reduction in cost, size and weight and an increase in reliability and serviceability.

In approximately 50% of the time the klystron cavity will be driven in the correct direction so as to return the L.O. to its maximum power condition. For the other times, where the drive is in the wrong direction the L.O. power will drop off to the point (this level should be set so as to maintain favorable receiver noise figure) where the unbalance in the differential amplifier will be great enough to trip the reversing relay. Subsequently the motor will then return the L.O. to the peak of its mode.

WORKS		DEPARTMENT		PATENT DEPARTMENT RECEIVED	
BALTIMORE		ENGINEERING		OCT 15 1958	
FULL NAME OF INVENTOR		DATE OF CONCEPTION		PATENT DEPT. STAMP	
DATE EXPLAINED AND UNDERSTOOD BY ME		SIGNATURE OF WITNESS		DATE OF SIGNATURE	
5/19/58				5/19/58	
DATE EXPLAINED AND UNDERSTOOD BY ME		DATE OF SIGNATURE		DATE OF SIGNATURE	
5-19-58		5-19-58		5-19-58	
FORM AAE-42					

STAT



PATENT DEPARTMENT
RECEIVED
OCT 27 1958

PATENT DEPARTMENT
RECEIVED
OCT 15 1958
FILE CLERK

STAT

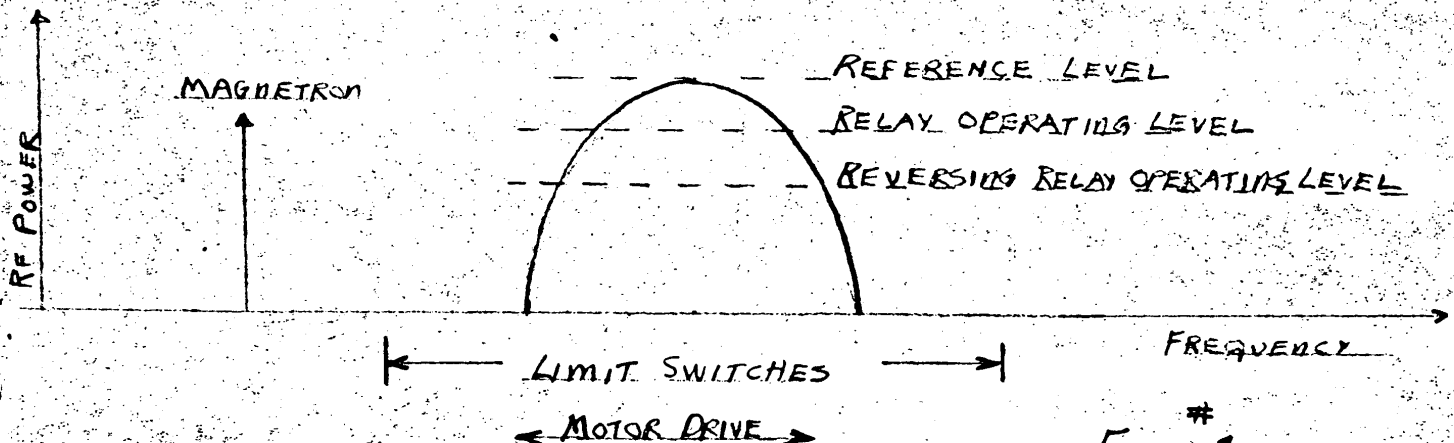


FIG 1

STAT